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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,592	05/23/2001	Steven R. J Pearl	MCA-433 PC/U	9295
25182	7590	02/24/2004	EXAMINER	
MILLIPORE CORPORATION 290 CONCORD ROAD BILLERICA, MA 01821			KIM, SUN U	
			ART UNIT	PAPER NUMBER
			1723	

DATE MAILED: 02/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,592

Applicant(s)

PEARL ET AL.

Examiner

John Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 and 26-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 26-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/11/04 has been entered.

2. The oath or declaration filed on 2/11/04 is accepted.

3. The disclosure is objected to because of the following informalities:

Added recitation filed on 8/4/03 for claiming the benefit of U.S. Provisional Pat. App. Ser. No. 60/112,647, filed December 17, 1998 at page 1, line 7 should be corrected to show as follows: "This application is a 371 of PCT/US99/30141 filed 12/17/99 which claims the benefit of U.S. Provisional Pat. App. Ser. No. 60/112,647, filed December 17, 1998".

Appropriate correction is required.

4. The drawings were received on 2/11/04. These drawings are objected to because Figure 8 is missing. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Legend of "Figure 3B" should be changed to "Figure 8".

Appropriate correction is required.

5. Claim 28 is objected to because of the following informalities: "the angle of winding said hollow fiber" on line 1 should be corrected to "the angle of winding of said hollow fiber". Furthermore, "30" on line 2 lacks a scientific unit.

Appropriate correction is required.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 26-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 26 recites that said outer diameter of said hollow fiber is in the range of about 0.3 mm to about 6.0 mm. The lower range of the outer diameter i.e. 0.3 mm is smaller than the lower range of the inner diameter of about 1.0 mm. Smaller outer diameter compared to inner diameter is contradictory to the relationship of the size of outer and inner diameter of the hollow fiber. Recitation of "said mandrel" on line 1 of claim 27 lacks a positive antecedent basis.

8. Claims 12 and 26-28 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 5,626,758 (hereinafter referred to as Belfort). Belfort teaches a multi-layered coil hollow fiber bundles designed to provide a specific performance output to create Dean vortices when subjected to a certain velocity wherein performance depends on the hollow fiber's inner and outer diameters, number of fibers, inherent angle of coiling and length of fibers and diameter of rod and inherently the length of rod which fibers are coiled and minimization of gaps between fibers to maximize the packing density of the fibers and above variables are calculated and manipulated to design coiled hollow fiber bundle that provide a specific performance output to create Dean vortices (see figures 1-2, 4-5, 7-15; equations 1-10; col. 3, line 42 – col. 6, line 21). Equations 1-10 in Belfort shows that maximum Dean ratio is related to the hollow fiber's inner and outer diameters and number of fibers. Belfort teaches that a multiple coiled layers of hollow fibers as shown in figure 14 and that the Dean vortex flow of the invention not only has similar advantages as Taylor vortex and oscillating flows but also is amenable to scale-up (see col. 2,

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lines 30-32) and shows coiling of multiple hollow fiber layers both axially and radially in Figure 14 and radially only in Figure 15 to take numerous advantages cited on col. 10, lines 48-65.

Belfort teaches that critical inner diameter and outer diameter of hollow fiber are 1.77 mm and 2.04 mm (see col. 5, lines 33-38). Belfort further teaches that the smallest diameter of rod that the fibers could be wrapped around without damaging them was found to be 3 mm (see col. 5, lines 7-9) and further teaches that the rods had a diameter of 3.175 mm i.e. about 3.2 mm (see col. 4, lines 58-60). Claims 12 and 26-28 essentially differ from Belfort in reciting that Dean vortices are generated in the hollow fiber in both first and second layers and both first and second layers perform substantially equivalently along at least one predetermined performance parameter. It would have been obvious to a person of ordinary skill in the art to utilize the guideline in Belfort to calculate variables and manipulate to design multiple coiled hollow fiber bundles that provide a specific performance output to create Dean vortices in both layers that perform substantially equivalently along a predetermined performance parameter such as flow rate.

9. Applicant's arguments filed 2/11/04 have been fully considered but they are not persuasive. Applicants argue that Belfort does not disclose both linear scaling and overlapping fiber coils. However, Belfort teaches both linear scaling and overlapping fiber coils as amply described in above paragraph 9.

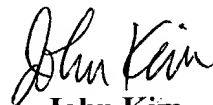
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kim whose telephone number is (571) 272-1142. The examiner can normally be reached on weekdays from 7:00 AM - 3:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached on (571) 272-1151. The fax phone number for official response is (703) 872-9306.

When sending a draft amendment by fax, please mark the paper as "DRAFT"; otherwise, mark the paper "OFFICIAL". This will expedite the processing of the paper.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0651.



John Kim
Primary Examiner
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J. Kim
February 19, 2004